

ABSTRACT

Hydrogeological coal mine study of PT. Gunung Bayan Pratama Coal is located in Muara Tae village, Jeumpang District, West Kutai regency, East Kalimantan province. This study focuses on the rainfall characteristics, surface run off conditions, the aquifer type and characteristics, and groundwater potential connection with the feasibility study planned coal deposits in PT. Gunung Bayan Paratama Coal. The geological conditions in the study area is generally dominated by sandstone, claystone, coalyshale, coal, and silt with varying thickness and composition.

Based on 11 years (1999-2009) rainfall data, the annual rainfall in the study area ranged from 1796.5 - 3341.0 mm. The average rainfall is 2454.4 mm per year. While 88 - 147 are the range number of rainy days per year, with an 121 days/year average.

Calculations are based on rainfall precipitation plans data from PT. Gunung Bayan Paratama Coal meteorological stations, the importance of 3 years return period obtained, with 63.81 mm rainfall plan, and 22.12 mm/hour rain intensity.

Discharge runoff surface that occurs depends on the rainfall intensity level and the narrow of Catchment Area width. The catchment area is divided in $Q1 = 12,76 \text{ m}^3$ and $Q2 = 16,92 \text{ m}^3$.

An aquifer Slug Test method result demonstrates the value of permeability range (K) from $1,678.10^{-6} \text{ m/sec}$ to $6,7519.10^{-6} \text{ m/sec}$, and based on Table Top Water Conductivity of Soil (Groundwater Hydrology. Todd, DK, 1960) the aquifer in the study area are low productivity aquifers type.

Based on data summary of analysis test results, the physical and chemical properties of surface water quality in the laboratory obtained 6.66 pH to 7.86 pH range of value, catchment area between (16.0 - 42,9.0) $\mu\text{mhos/cm}$, 60 to 115 mg/l Total Suspended Solid and 3.72 to 44.35 FTU turbidity with a 26° C temperature and some of chemical elements water content such as Fe ranging from 0.08 to 1.366mg/l. Referring to the 82/2001 Regulation criteria and No. 113/2003 Environment Decree the condition of surface water quality in the study area is still below threshold.